

DI-12
SEQUENCE LISTING

<110> Weber, Eric R.
Jensen, Wayne A.
Chandrashekar, Ramaswamy

<120> CANINE TAG1 PROTEINS, NUCLEIC ACID MOLECULES, AND USES THEREOF

<130> DI-12

<140> not yet assigned

<141> 2001-07-30

<150> 60/224,655

<151> 2000-08-11

<160> 85

<170> PatentIn version 3.1

<210> 1

<211> 814

<212> DNA

<213> Mus musculus

<400> 1

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caaggccttg gggatgggag gcaccagagg gagaatctac atcaagcacc cacacctctt     300
taagtatgca gcagatcctc aggacaagca ctggctggct gagcagcatc acatgcgggc     360
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<210> 2

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<212> DNA

<213> Canis familiaris

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<223> n = unknown at position 1111

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gag cag ccg cgg gga ccc ggc ggg gca gag cgg ggc ggc tcc gag ctg      102
Glu Gln Pro Arg Gly Pro Gly Gly Ala Glu Arg Gly Gly Ser Glu Leu
               10                   15                   20

ggc gac gcg ggc gca gcg ggg cag ctg aac cct tgg aac ata atg ata      150
Gly Asp Ala Gly Ala Ala Gly Gln Leu Asn Pro Trp Asn Ile Met Ile
               25                   30                   35

aag cac agg cag gtg cag cga agg ggc cgc cgc tca cag atg aca aca      198
Lys His Arg Gln Val Gln Arg Arg Gly Arg Ser Gln Met Thr Thr
               40                   45                   50                   55

agt ttc aca gat cct gcc att tcc atg gac ctc ctt cga gct gtc ctg      246
Ser Phe Thr Asp Pro Ala Ile Ser Met Asp Leu Leu Arg Ala Val Leu
               60                   65                   70

cag cct agc atc aac gag gag atc cag acg gtc ttc aac aag tat atg      294
Gln Pro Ser Ile Asn Glu Glu Ile Gln Thr Val Phe Asn Lys Tyr Met
               75                   80                   85

aag ttc ttc cag aag gca gca ctg aac gtc aga gac aat gtc ggg gaa      342
Lys Phe Phe Gln Lys Ala Ala Leu Asn Val Arg Asp Asn Val Gly Glu
               90                   95                   100

gaa gtg gac gca gag cag ctg atc cag gag gcc tgt cgg agc tgc ctg      390
Glu Val Asp Ala Glu Gln Leu Ile Gln Glu Ala Cys Arg Ser Cys Leu
               105                   110                   115

gag cag gct aaa ctc ctg ttt tca gat gga gaa aaa gta ata ccc aga      438
Glu Gln Ala Lys Leu Leu Phe Ser Asp Gly Glu Lys Val Ile Pro Arg
               120                   125                   130                   135

ttg gcc cat gag ctt cca ggg ata aag cgt ggc cga cag aca gaa gag      486
Leu Ala His Glu Leu Pro Gly Ile Lys Arg Gly Arg Gln Thr Glu Glu
               140                   145                   150

gaa tgt gcc cat cga gga agc cct gtt ccc aaa aag agg aaa gga cgg      534
Glu Cys Ala His Arg Gly Ser Pro Val Pro Lys Lys Arg Lys Gly Arg
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cct cct gga cac atg ctg tgc aat gac cgg gca gcc gct ggc atg gta 582
Pro Pro Gly His Met Leu Ser Asn Asp Arg Ala Ala Ala Gly Met Val
170 175 180

tgg aaa cca aag tcc tgt gaa cca att cgc cga gaa ggc ccc aag tgg 630
Trp Lys Pro Lys Ser Cys Glu Pro Ile Arg Arg Glu Gly Pro Lys Trp
185 190 195

gac cca gcc cgg ctg aat gaa tct acc acc ttt gtg ttg gga tct cga 678
Asp Pro Ala Arg Leu Asn Glu Ser Thr Thr Phe Val Leu Gly Ser Arg
200 205 210 215

gcc aac aag gcc ctg ggg atg ggg ggc acc aga ggg aga atc tac atc 726
Ala Asn Lys Ala Leu Gly Met Gly Gly Thr Arg Gly Arg Ile Tyr Ile
220 225 230

aag cac ccg cac ctc ttt aag tat gca gct gac ccc cag gac aag cac 774
Lys His Pro His Leu Phe Lys Tyr Ala Ala Asp Pro Gln Asp Lys His
235 240 245

tgg ctg gcc gag cag cat cac atg cgg gca aca ggg ggg aag atg gcc 822
Trp Leu Ala Glu Gln His His Met Arg Ala Thr Gly Gly Lys Met Ala
250 255 260

tac ctc ctc atc gag gag gac atc cgg gac ctc gca gcc agt gat gac 870
Tyr Leu Leu Ile Glu Glu Asp Ile Arg Asp Leu Ala Ala Ser Asp Asp
265 270 275

tat aga gga tgc ctg gac ttg aag ttg gag gag ctg aaa tcc ttt gtg 918
Tyr Arg Gly Cys Leu Asp Leu Lys Leu Glu Glu Leu Lys Ser Phe Val
280 285 290 295

ctg ccc tcc tgg atg gtt gag aag atg cga aag tac atg gag aca cta 966
Leu Pro Ser Trp Met Val Glu Lys Met Arg Lys Tyr Met Glu Thr Leu
300 305 310

cgg aca gag aac gag cat cgt gct gtt gaa gcg cct cca cag acc 1011
Arg Thr Glu Asn Glu His Arg Ala Val Glu Ala Pro Pro Gln Thr
315 320 325

tgaccgaagc caagaccctt ggctacactt ggcagccctc ctccaaggcc ctggcaccca 1071

cgtggcggag gccactgctg ggactgcacc tggatggatn tcagcagcat taagctgtgc 1131

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gtaaagtatt cgggttaaga aacaattaaa cagtttgtaa ttgtg 1236

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<211> 326
<212> PRT
<213> Canis familiaris

<220>
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<222> (1111)..(1111)

DI-12

<223> n = unknown at position 1111

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Asn Pro Trp Asn Ile Met Ile Lys His Arg Gln Val Gln Arg Arg Gly
35 40 45

Arg Arg Ser Gln Met Thr Thr Ser Phe Thr Asp Pro Ala Ile Ser Met
50 55 60

Asp Leu Leu Arg Ala Val Leu Gln Pro Ser Ile Asn Glu Glu Ile Gln
65 70 75 80

Thr Val Phe Asn Lys Tyr Met Lys Phe Phe Gln Lys Ala Ala Leu Asn
85 90 95

Val Arg Asp Asn Val Gly Glu Glu Val Asp Ala Glu Gln Leu Ile Gln
100 105 110

Glu Ala Cys Arg Ser Cys Leu Glu Gln Ala Lys Leu Leu Phe Ser Asp
115 120 125

Gly Glu Lys Val Ile Pro Arg Leu Ala His Glu Leu Pro Gly Ile Lys
130 135 140

Arg Gly Arg Gln Thr Glu Glu Glu Cys Ala His Arg Gly Ser Pro Val
145 150 155 160

Pro Lys Lys Arg Lys Gly Arg Pro Pro Gly His Met Leu Ser Asn Asp
165 170 175

Arg Ala Ala Ala Gly Met Val Trp Lys Pro Lys Ser Cys Glu Pro Ile
180 185 190

Arg Arg Glu Gly Pro Lys Trp Asp Pro Ala Arg Leu Asn Glu Ser Thr
195 200 205

Thr Phe Val Leu Gly Ser Arg Ala Asn Lys Ala Leu Gly Met Gly Gly
210 215 220

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Thr Arg Gly Arg Ile Tyr Ile Lys His Pro His Leu Phe Lys Tyr Ala
225 230 235 240

Ala Asp Pro Gln Asp Lys His Trp Leu Ala Glu Gln His His Met Arg
245 250 255

Ala Thr Gly Gly Lys Met Ala Tyr Leu Leu Ile Glu Glu Asp Ile Arg
260 265 270

Asp Leu Ala Ala Ser Asp Asp Tyr Arg Gly Cys Leu Asp Leu Lys Leu
275 280 285

Glu Glu Leu Lys Ser Phe Val Leu Pro Ser Trp Met Val Glu Lys Met
290 295 300

Arg Lys Tyr Met Glu Thr Leu Arg Thr Glu Asn Glu His Arg Ala Val
305 310 315 320

Glu Ala Pro Pro Gln Thr
325

<210> 4
<211> 1236
<212> DNA
<213> Canis familiaris

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<222> (126)..(126)
<223> n = unknown at position 126

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gctganatcc atccaggtgc agtcccagca gtggcctccg ccacgtgggt gccagggcct 180
tggaggaggg ctgccaagtg tagccagggg tcttggtctc ggtcaggtct gtggaggcgc 240
ttcaacagca cgatgctcgt tctctgtccg tagtgtctcc atgtactttc gcattctctc 300
aaccatccag gagggcagca caaaggattt cagctcctcc aacttcaagt ccaggcatcc 360
tctatagtca tcaactggctg cgagggtccc gatgtcctcc tcgatgagga ggtaggccat 420
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agctgcatac ttaaagaggt gcggggtgctt gatgtagatt ctccctctgg tgccccccat 540
ccccagggcc ttgttggctc gagatcccaa cacaaagggtg gtagattcat tcagccgggc 600
tgggtcccac ttggggcctt ctcggcgaat tgggtcacag gactttgggt tccataccat 660
gccagcggct gcccggtcat tcgacagcat gtgtccagga ggccgtcctt tcctcttttt 720
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tggaagctca tgggccaatc tgggtattac ttttctcca tctgaaaaca ggagtttagc 840
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<210> 5
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<212> DNA
<213> Canis familiaris

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<220>
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<222> (1)..(978)
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1 5 10 15

gag cgg ggc ggc tcc gag ctg ggc gac gcg ggc gca gcg ggg cag ctg 96
Glu Arg Gly Gly Ser Glu Leu Gly Asp Ala Gly Ala Ala Gly Gln Leu
20 25 30

aac cct tgg aac ata atg ata aag cac agg cag gtg cag cga agg ggc 144
Asn Pro Trp Asn Ile Met Ile Lys His Arg Gln Val Gln Arg Arg Gly
35 40 45

cgc cgc tca cag atg aca aca agt ttc aca gat cct gcc att tcc atg 192
Arg Arg Ser Gln Met Thr Thr Ser Phe Thr Asp Pro Ala Ile Ser Met
50 55 60

gac ctc ctt cga gct gtc ctg cag cct agc atc aac gag gag atc cag 240
Asp Leu Leu Arg Ala Val Leu Gln Pro Ser Ile Asn Glu Glu Ile Gln
65 70 75 80

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acg gtc ttc aac aag tat atg aag ttc ttc cag aag gca gca ctg aac	288
Thr Val Phe Asn Lys Tyr Met Lys Phe Phe Gln Lys Ala Ala Leu Asn	
85 90 95	
gtc aga gac aat gtc ggg gaa gaa gtg gac gca gag cag ctg atc cag	336
Val Arg Asp Asn Val Gly Glu Glu Val Asp Ala Glu Gln Leu Ile Gln	
100 105 110	
gag gcc tgt cgg agc tgc ctg gag cag gct aaa ctc ctg ttt tca gat	384
Glu Ala Cys Arg Ser Cys Leu Glu Gln Ala Lys Leu Leu Phe Ser Asp	
115 120 125	
gga gaa aaa gta ata ccc aga ttg gcc cat gag ctt cca ggg ata aag	432
Gly Glu Lys Val Ile Pro Arg Leu Ala His Glu Leu Pro Gly Ile Lys	
130 135 140	
cgt ggc cga cag aca gaa gag gaa tgt gcc cat cga gga agc cct gtt	480
Arg Gly Arg Gln Thr Glu Glu Glu Cys Ala His Arg Gly Ser Pro Val	
145 150 155 160	
ccc aaa aag agg aaa gga cgg cct cct gga cac atg ctg tcg aat gac	528
Pro Lys Lys Arg Lys Gly Arg Pro Pro Gly His Met Leu Ser Asn Asp	
165 170 175	
cgg gca gcc gct ggc atg gta tgg aaa cca aag tcc tgt gaa cca att	576
Arg Ala Ala Ala Gly Met Val Trp Lys Pro Lys Ser Cys Glu Pro Ile	
180 185 190	
cgc cga gaa ggc ccc aag tgg gac cca gcc cgg ctg aat gaa tct acc	624
Arg Arg Glu Gly Pro Lys Trp Asp Pro Ala Arg Leu Asn Glu Ser Thr	
195 200 205	
acc ttt gtg ttg gga tct cga gcc aac aag gcc ctg ggg atg ggg ggc	672
Thr Phe Val Leu Gly Ser Arg Ala Asn Lys Ala Leu Gly Met Gly Gly	
210 215 220	
acc aga ggg aga atc tac atc aag cac ccg cac ctc ttt aag tat gca	720
Thr Arg Gly Arg Ile Tyr Ile Lys His Pro His Leu Phe Lys Tyr Ala	
225 230 235 240	
gct gac ccc cag gac aag cac tgg ctg gcc gag cag cat cac atg cgg	768
Ala Asp Pro Gln Asp Lys His Trp Leu Ala Glu Gln His His Met Arg	
245 250 255	
gca aca ggg ggg aag atg gcc tac ctc ctc atc gag gag gac atc cgg	816
Ala Thr Gly Gly Lys Met Ala Tyr Leu Leu Ile Glu Glu Asp Ile Arg	
260 265 270	
gac ctc gca gcc agt gat gac tat aga gga tgc ctg gac ttg aag ttg	864
Asp Leu Ala Ala Ser Asp Asp Tyr Arg Gly Cys Leu Asp Leu Lys Leu	
275 280 285	
gag gag ctg aaa tcc ttt gtg ctg ccc tcc tgg atg gtt gag aag atg	912
Glu Glu Leu Lys Ser Phe Val Leu Pro Ser Trp Met Val Glu Lys Met	
290 295 300	
cga aag tac atg gag aca cta cgg aca gag aac gag cat cgt gct gtt	960

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Arg Lys Tyr Met Glu Thr Leu Arg Thr Glu Asn Glu His Arg Ala Val
305 310 315 320

gaa gcg cct cca cag acc
Glu Ala Pro Pro Gln Thr
325

978

<210> 6
<211> 326
<212> PRT
<213> Canis familiaris

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Asn Pro Trp Asn Ile Met Ile Lys His Arg Gln Val Gln Arg Arg Gly
35 40 45

Arg Arg Ser Gln Met Thr Thr Ser Phe Thr Asp Pro Ala Ile Ser Met
50 55 60

Asp Leu Leu Arg Ala Val Leu Gln Pro Ser Ile Asn Glu Glu Ile Gln
65 70 75 80

Thr Val Phe Asn Lys Tyr Met Lys Phe Phe Gln Lys Ala Ala Leu Asn
85 90 95

Val Arg Asp Asn Val Gly Glu Glu Val Asp Ala Glu Gln Leu Ile Gln
100 105 110

Glu Ala Cys Arg Ser Cys Leu Glu Gln Ala Lys Leu Leu Phe Ser Asp
115 120 125

Gly Glu Lys Val Ile Pro Arg Leu Ala His Glu Leu Pro Gly Ile Lys
130 135 140

Arg Gly Arg Gln Thr Glu Glu Glu Cys Ala His Arg Gly Ser Pro Val
145 150 155 160

Pro Lys Lys Arg Lys Gly Arg Pro Pro Gly His Met Leu Ser Asn Asp
165 170 175

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Arg Ala Ala Ala Gly Met Val Trp Lys Pro Lys Ser Cys Glu Pro Ile
180 185 190

Arg Arg Glu Gly Pro Lys Trp Asp Pro Ala Arg Leu Asn Glu Ser Thr
195 200 205

Thr Phe Val Leu Gly Ser Arg Ala Asn Lys Ala Leu Gly Met Gly Gly
210 215 220

Thr Arg Gly Arg Ile Tyr Ile Lys His Pro His Leu Phe Lys Tyr Ala
225 230 235 240

Ala Asp Pro Gln Asp Lys His Trp Leu Ala Glu Gln His His Met Arg
245 250 255

Ala Thr Gly Gly Lys Met Ala Tyr Leu Leu Ile Glu Glu Asp Ile Arg
260 265 270

Asp Leu Ala Ala Ser Asp Asp Tyr Arg Gly Cys Leu Asp Leu Lys Leu
275 280 285

Glu Glu Leu Lys Ser Phe Val Leu Pro Ser Trp Met Val Glu Lys Met
290 295 300

Arg Lys Tyr Met Glu Thr Leu Arg Thr Glu Asn Glu His Arg Ala Val
305 310 315 320

Glu Ala Pro Pro Gln Thr
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caagtccagg catcctctat agtcatcact ggctgagagg tcccggatgt cctcctcgat 180
gaggaggtag gccatcttcc cccctgttgc ccgcatgtga tgctgctcgg ccagccagtg 240
cttgtcctgg gggtcagctg cataactaaa gaggtgaggg tgcttgatgt agattctccc 300
tctggtgccc cccatcccca gggccttggt ggctcgagat cccaacacaa aggtggtaga 360

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tcctttcctc tttttgggaa cagggttcc tcgatgggca cattcctctt ctgtctgtcg 540
gccacgcttt atccctggaa gtcctgggc caatctgggt attacttttt ctccatctga 600
aaacaggagt ttagcctgct ccaggcagct ccgacaggcc tcctggatca gctgctctgc 660
gtccacttct tccccgacat tgtctctgac gttcagtgtc gccttctgga agaacttcat 720
atacttggtg aagaccgtct ggatctcctc gttgatgcta ggctgcagga cagctcgaag 780
gaggtccatg gaaatggcag gatctgtgaa acttggtgtc atctgtgagc ggcgccccc 840
tcgctgcacc tgccgtgtgt ttatcattat gttccaaggg ttcagctgcc ccgctgcgcc 900
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<210> 8
<211> 144
<212> DNA
<213> Canis familiaris

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<220>
<221> CDS
<222> (1)..(144)
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1 5 10 15

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Glu Arg Gly Gly Ser Glu Leu Gly Asp Ala Gly Ala Ala Gly Gln Leu
20 25 30

aac cct tgg aac ata atg ata aag cac agg cag gtg cag cga agg ggc 144
Asn Pro Trp Asn Ile Met Ile Lys His Arg Gln Val Gln Arg Arg Gly
35 40 45

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<210> 9
<211> 48
<212> PRT
<213> Canis familiaris

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1 5 10 15

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 20 25 30

Asn Pro Trp Asn Ile Met Ile Lys His Arg Gln Val Gln Arg Arg Gly
 35 40 45

<210> 10
 <211> 144
 <212> DNA
 <213> Canis familiaris

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 <212> DNA
 <213> Canis familiaris

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 1 5 10 15
 gac ctc ctt cga gct gtc ctg cag cct agc atc aac gag gag atc cag 96
 Asp Leu Leu Arg Ala Val Leu Gln Pro Ser Ile Asn Glu Glu Ile Gln
 20 25 30
 acg gtc ttc aac aag tat atg aag ttc ttc cag aag gca gca ctg aac 144
 Thr Val Phe Asn Lys Tyr Met Lys Phe Phe Gln Lys Ala Ala Leu Asn
 35 40 45
 gtc aga gac aat gtc ggg gaa gaa gtg gac gca gag cag ctg atc cag 192
 Val Arg Asp Asn Val Gly Glu Glu Val Asp Ala Glu Gln Leu Ile Gln
 50 55 60
 gag gcc tgt cgg agc tgc ctg gag cag gct 222
 Glu Ala Cys Arg Ser Cys Leu Glu Gln Ala
 65 70

<210> 12
 <211> 74

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<212> PRT

<213> Canis familiaris

<400> 12

Arg Arg Ser Gln Met Thr Thr Ser Phe Thr Asp Pro Ala Ile Ser Met
1 5 10 15

Asp Leu Leu Arg Ala Val Leu Gln Pro Ser Ile Asn Glu Glu Ile Gln
20 25 30

Thr Val Phe Asn Lys Tyr Met Lys Phe Phe Gln Lys Ala Ala Leu Asn
35 40 45

Val Arg Asp Asn Val Gly Glu Glu Val Asp Ala Glu Gln Leu Ile Gln
50 55 60

Glu Ala Cys Arg Ser Cys Leu Glu Gln Ala
65 70

<210> 13

<211> 222

<212> DNA

<213> Canis familiaris

<400> 13

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cccacatttg tctctgacgt tcagtgcctgc cttctggaag aacttcatat acttgttgaa 120

gaccgtctgg atctcctcgt tgatgctagg ctgcaggaca gctcgaagga ggtccatgga 180

aatggcagga tctgtgaaac ttgttgatcat ctgtgagcgg cg 222

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<213> Canis familiaris

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<221> CDS

<222> (1)..(612)

<223>

<400> 14

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Lys Leu Leu Phe Ser Asp Gly Glu Lys Val Ile Pro Arg Leu Ala His
1 5 10 15

gag ctt cca ggg ata aag cgt ggc cga cag aca gaa gag gaa tgt gcc 96
Glu Leu Pro Gly Ile Lys Arg Gly Arg Gln Thr Glu Glu Glu Cys Ala

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20	25	30	
cat cga gga agc cct gtt ccc aaa aag agg aaa gga cgg cct cct gga His Arg Gly Ser Pro Val Pro Lys Lys Arg Lys Gly Arg Pro Pro Gly 35 40 45			144
cac atg ctg tcg aat gac cgg gca gcc gct ggc atg gta tgg aaa cca His Met Leu Ser Asn Asp Arg Ala Ala Ala Gly Met Val Trp Lys Pro 50 55 60			192
aag tcc tgt gaa cca att cgc cga gaa ggc ccc aag tgg gac cca gcc Lys Ser Cys Glu Pro Ile Arg Arg Glu Gly Pro Lys Trp Asp Pro Ala 65 70 75 80			240
cgg ctg aat gaa tct acc acc ttt gtg ttg gga tct cga gcc aac aag Arg Leu Asn Glu Ser Thr Thr Phe Val Leu Gly Ser Arg Ala Asn Lys 85 90 95			288
gcc ctg ggg atg ggg ggc acc aga ggg aga atc tac atc aag cac ccg Ala Leu Gly Met Gly Gly Thr Arg Gly Arg Ile Tyr Ile Lys His Pro 100 105 110			336
cac ctc ttt aag tat gca gct gac ccc cag gac aag cac tgg ctg gcc His Leu Phe Lys Tyr Ala Ala Asp Pro Gln Asp Lys His Trp Leu Ala 115 120 125			384
gag cag cat cac atg cgg gca aca ggg ggg aag atg gcc tac ctc ctc Glu Gln His His Met Arg Ala Thr Gly Gly Lys Met Ala Tyr Leu Leu 130 135 140			432
atc gag gag gac atc cgg gac ctc gca gcc agt gat gac tat aga gga Ile Glu Glu Asp Ile Arg Asp Leu Ala Ala Ser Asp Asp Tyr Arg Gly 145 150 155 160			480
tgc ctg gac ttg aag ttg gag gag ctg aaa tcc ttt gtg ctg ccc tcc Cys Leu Asp Leu Lys Leu Glu Glu Leu Lys Ser Phe Val Leu Pro Ser 165 170 175			528
tgg atg gtt gag aag atg cga aag tac atg gag aca cta cgg aca gag Trp Met Val Glu Lys Met Arg Lys Tyr Met Glu Thr Leu Arg Thr Glu 180 185 190			576
aac gag cat cgt gct gtt gaa gcg cct cca cag acc Asn Glu His Arg Ala Val Glu Ala Pro Pro Gln Thr 195 200			612

<210> 15
 <211> 204
 <212> PRT
 <213> Canis familiaris

<400> 15

Lys	Leu	Leu	Phe	Ser	Asp	Gly	Glu	Lys	Val	Ile	Pro	Arg	Leu	Ala	His
1				5					10					15	

DI-12

Glu Leu Pro Gly Ile Lys Arg Gly Arg Gln Thr Glu Glu Glu Cys Ala
20 25 30

His Arg Gly Ser Pro Val Pro Lys Lys Arg Lys Gly Arg Pro Pro Gly
35 40 45

His Met Leu Ser Asn Asp Arg Ala Ala Ala Gly Met Val Trp Lys Pro
50 55 60

Lys Ser Cys Glu Pro Ile Arg Arg Glu Gly Pro Lys Trp Asp Pro Ala
65 70 75 80

Arg Leu Asn Glu Ser Thr Thr Phe Val Leu Gly Ser Arg Ala Asn Lys
85 90 95

Ala Leu Gly Met Gly Gly Thr Arg Gly Arg Ile Tyr Ile Lys His Pro
100 105 110

His Leu Phe Lys Tyr Ala Ala Asp Pro Gln Asp Lys His Trp Leu Ala
115 120 125

Glu Gln His His Met Arg Ala Thr Gly Gly Lys Met Ala Tyr Leu Leu
130 135 140

Ile Glu Glu Asp Ile Arg Asp Leu Ala Ala Ser Asp Asp Tyr Arg Gly
145 150 155 160

Cys Leu Asp Leu Lys Leu Glu Glu Leu Lys Ser Phe Val Leu Pro Ser
165 170 175

Trp Met Val Glu Lys Met Arg Lys Tyr Met Glu Thr Leu Arg Thr Glu
180 185 190

Asn Glu His Arg Ala Val Glu Ala Pro Pro Gln Thr
195 200

<210> 16
<211> 612
<212> DNA
<213> Canis familiaris

<400> 16
ggctctgtgga ggcgcttcaa cagcacgatg ctcgttctct gtcgtagtg tctccatgta 60
ctttcgcac ttttcaacca tccaggaggg cagcaciaaag gatttcagct cctccaactt 120

DI-12

caagtccagg catcctctat agtcatcact ggctgcgagg tcccggatgt cctcctcgat 180
gaggaggtag gccatcttcc ccctgttgc ccgcatgtga tgetgctcgg ccagccagtg 240
cttgtcctgg gggtcagctg cataactaaa gaggtgcggg tgcttgatgt agattctccc 300
tctgggtgcc cccatcccca gggccttgtt ggctcgagat cccaacacaa aggtggtaga 360
ttcattcagc cgggctgggt ccacttggg gccttctcgg cgaattgggt cacaggactt 420
tggtttccat accatgccag cggctgcccg gtcattcgac agcatgtgtc caggaggccg 480
tcctttcttc tttttgggaa cagggttcc tcgatgggca cattcctctt ctgtctgtcg 540
gccacgcttt atccctggaa gtcatgggc caatctgggt attacttttt ctccatctga 600
aacaggagt tt 612

<210> 17
<211> 1269
<212> DNA
<213> Canis familiaris

<220>
<221> CDS
<222> (58)..(1044)
<223>

<400> 17
ggccactttc cggcgggtgg cagagtcggg ctgaggttgg ggggcgccgg gggagcc 57
atg ggg gcc act ggc gac gcc gag cag ccg cgg gga ccc ggc ggg gca 105
Met Gly Ala Thr Gly Asp Ala Glu Gln Pro Arg Gly Pro Gly Gly Ala
1 5 10 15
gag cgg ggc ggc tcc gag ctg ggc gac gcg ggc gca gcg ggg cag ctg 153
Glu Arg Gly Gly Ser Glu Leu Gly Asp Ala Gly Ala Ala Gly Gln Leu
20 25 30
gta ctc acg aac cct tgg aac ata atg ata aag cac agg cag gtg cag 201
Val Leu Thr Asn Pro Trp Asn Ile Met Ile Lys His Arg Gln Val Gln
35 40 45
cga agg ggc cgc cgc tca cag atg aca aca agt ttc aca gat cct gcc 249
Arg Arg Gly Arg Arg Ser Gln Met Thr Thr Ser Phe Thr Asp Pro Ala
50 55 60
att tcc atg gac ctc ctt cga gct gtc ctg cag cct agc atc aac gag 297
Ile Ser Met Asp Leu Leu Arg Ala Val Leu Gln Pro Ser Ile Asn Glu
65 70 75 80
gag atc cag acg gtc ttc aac aag tat atg aag ttc ttc cag aag gca 345
Glu Ile Gln Thr Val Phe Asn Lys Tyr Met Lys Phe Phe Gln Lys Ala
85 90 95
gca ctg aac gtc aga gac aat gtc ggg gaa gaa gtg gac gca gag cag 393

DI-12

Ala	Leu	Asn	Val	Arg	Asp	Asn	Val	Gly	Glu	Glu	Val	Asp	Ala	Glu	Gln		
			100					105					110				
ctg	atc	cag	gag	gcc	tgt	cgg	agc	tgc	ctg	gag	cag	gct	aaa	ctc	ctg	441	
Leu	Ile	Gln	Glu	Ala	Cys	Arg	Ser	Cys	Leu	Glu	Gln	Ala	Lys	Leu	Leu		
		115					120					125					
ttt	tca	gat	gga	gaa	aaa	gta	ata	ccc	aga	ttg	gcc	cat	gag	ctt	cca	489	
Phe	Ser	Asp	Gly	Glu	Lys	Val	Ile	Pro	Arg	Leu	Ala	His	Glu	Leu	Pro		
	130					135					140						
ggg	ata	aag	cgt	ggc	cga	cag	aca	gaa	gag	gaa	tgt	gcc	cat	cga	gga	537	
Gly	Ile	Lys	Arg	Gly	Arg	Gln	Thr	Glu	Glu	Cys	Ala	His	Arg	Gly			
145					150				155					160			
agc	cct	gtt	ccc	aaa	aag	agg	aaa	gga	cgg	cct	cct	gga	cac	atg	ctg	585	
Ser	Pro	Val	Pro	Lys	Lys	Arg	Lys	Gly	Arg	Pro	Pro	Gly	His	Met	Leu		
				165				170						175			
tcg	aat	gac	cgg	gca	gcc	gct	ggc	atg	gta	tgg	aaa	cca	aag	tcc	tgt	633	
Ser	Asn	Asp	Arg	Ala	Ala	Ala	Gly	Met	Val	Trp	Lys	Pro	Lys	Ser	Cys		
			180					185					190				
gaa	cca	att	cgc	cga	gaa	ggc	ccc	aag	tgg	gac	cca	gcc	cgg	ctg	aat	681	
Glu	Pro	Ile	Arg	Arg	Glu	Gly	Pro	Lys	Trp	Asp	Pro	Ala	Arg	Leu	Asn		
		195					200					205					
gaa	tct	acc	acc	ttt	gtg	ttg	gga	tct	cga	gcc	aac	aag	gcc	ctg	ggg	729	
Glu	Ser	Thr	Thr	Phe	Val	Leu	Gly	Ser	Arg	Ala	Asn	Lys	Ala	Leu	Gly		
	210					215					220						
atg	ggg	ggc	acc	aga	ggg	aga	atc	tac	atc	aag	cac	ccg	cac	ctc	ttt	777	
Met	Gly	Gly	Thr	Arg	Gly	Arg	Ile	Tyr	Ile	Lys	His	Pro	His	Leu	Phe		
225					230					235					240		
aag	tat	gca	gct	gac	ccc	cag	gac	aag	cac	tgg	ctg	gcc	gag	cag	cat	825	
Lys	Tyr	Ala	Ala	Asp	Pro	Gln	Asp	Lys	His	Trp	Leu	Ala	Glu	Gln	His		
				245				250						255			
cac	atg	cgg	gca	aca	ggg	ggg	aag	atg	gcc	tac	ctc	ctc	atc	gag	gag	873	
His	Met	Arg	Ala	Thr	Gly	Gly	Lys	Met	Ala	Tyr	Leu	Leu	Ile	Glu	Glu		
			260					265					270				
gac	atc	cgg	gac	ctc	gca	gcc	agt	gat	gac	tat	aga	gga	tgc	ctg	gac	921	
Asp	Ile	Arg	Asp	Leu	Ala	Ala	Ser	Asp	Asp	Tyr	Arg	Gly	Cys	Leu	Asp		
		275					280					285					
ttg	aag	ttg	gag	gag	ctg	aaa	tcc	ttt	gtg	ctg	ccc	tcc	tgg	atg	gtt	969	
Leu	Lys	Leu	Glu	Glu	Leu	Lys	Ser	Phe	Val	Leu	Pro	Ser	Trp	Met	Val		
	290					295					300						
gag	aag	atg	cga	aag	tac	atg	gag	aca	cta	cgg	aca	gag	aac	gag	cat	1017	
Glu	Lys	Met	Arg	Lys	Tyr	Met	Glu	Thr	Leu	Arg	Thr	Glu	Asn	Glu	His		
305					310				315					320			
cgt	gct	gtt	gaa	gcg	cct	cca	cag	acc	tgaccgaagc	caagaccct						1064	
Arg	Ala	Val	Glu	Ala	Pro	Pro	Gln	Thr									
				325													

DI-12

ggctacactt ggcagccctc ctccaaggcc ctggcaccca cgtggcggag gccactgctg 1124
 ggactgcacc tggatggatc tcagcagcat taagctgtgc ctgggctagt ctgtagtgac 1184
 tcactacaga gcacccccag actggcgtgt ggttctgttt gtaaagttat cgggttaaga 1244
 aacaattaaa cagtttttaa tagtg 1269

<210> 18
 <211> 329
 <212> PRT
 <213> Canis familiaris
 <400> 18

Met Gly Ala Thr Gly Asp Ala Glu Gln Pro Arg Gly Pro Gly Gly Ala
 1 5 10 15

Glu Arg Gly Gly Ser Glu Leu Gly Asp Ala Gly Ala Ala Gly Gln Leu
 20 25 30

Val Leu Thr Asn Pro Trp Asn Ile Met Ile Lys His Arg Gln Val Gln
 35 40 45

Arg Arg Gly Arg Arg Ser Gln Met Thr Thr Ser Phe Thr Asp Pro Ala
 50 55 60

Ile Ser Met Asp Leu Leu Arg Ala Val Leu Gln Pro Ser Ile Asn Glu
 65 70 75 80

Glu Ile Gln Thr Val Phe Asn Lys Tyr Met Lys Phe Phe Gln Lys Ala
 85 90 95

Ala Leu Asn Val Arg Asp Asn Val Gly Glu Glu Val Asp Ala Glu Gln
 100 105 110

Leu Ile Gln Glu Ala Cys Arg Ser Cys Leu Glu Gln Ala Lys Leu Leu
 115 120 125

Phe Ser Asp Gly Glu Lys Val Ile Pro Arg Leu Ala His Glu Leu Pro
 130 135 140

Gly Ile Lys Arg Gly Arg Gln Thr Glu Glu Glu Cys Ala His Arg Gly
 145 150 155 160

Ser Pro Val Pro Lys Lys Arg Lys Gly Arg Pro Pro Gly His Met Leu

165

DI-12
170

175

Ser Asn Asp Arg Ala Ala Ala Gly Met Val Trp Lys Pro Lys Ser Cys
180 185 190

Glu Pro Ile Arg Arg Glu Gly Pro Lys Trp Asp Pro Ala Arg Leu Asn
195 200 205

Glu Ser Thr Thr Phe Val Leu Gly Ser Arg Ala Asn Lys Ala Leu Gly
210 215 220

Met Gly Gly Thr Arg Gly Arg Ile Tyr Ile Lys His Pro His Leu Phe
225 230 235 240

Lys Tyr Ala Ala Asp Pro Gln Asp Lys His Trp Leu Ala Glu Gln His
245 250 255

His Met Arg Ala Thr Gly Gly Lys Met Ala Tyr Leu Leu Ile Glu Glu
260 265 270

Asp Ile Arg Asp Leu Ala Ala Ser Asp Asp Tyr Arg Gly Cys Leu Asp
275 280 285

Leu Lys Leu Glu Glu Leu Lys Ser Phe Val Leu Pro Ser Trp Met Val
290 295 300

Glu Lys Met Arg Lys Tyr Met Glu Thr Leu Arg Thr Glu Asn Glu His
305 310 315 320

Arg Ala Val Glu Ala Pro Pro Gln Thr
325

<210> 19

<211> 1269

<212> DNA

<213> Canis familiaris

<400> 19

cactattaaa aactgttttaa ttgtttctta acccgataac ttacaaaca gaaccacacg 60

ccagtctggg ggtgctctgt agtgagtcac tacagactag cccaggcaca gcttaatgct 120

gctgagatcc atccaggtgc agtcccagca gtggcctccg ccacgtgggt gccagggcct 180

tggaggaggg ctgccaagtg tagccagggg tcttggtctt ggtcaggtct gtggaggcgc 240

ttcaacagca cgatgctcgt tctctgtccg tagtgtctcc atgtactttc gcattctctc 300

DI-12

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aaccatccag gagggcagca caaaggattt cagctcctcc aacttcaagt ccaggcatcc 360
tctatagtca tcaactggctg cgaggteccg gatgtcctcc tcgatgagga ggtaggcatc 420
cttccccctt gttgcccgcg tgtgatgctg ctcgccagc cagtgttctt cctgggggtc 480
agctgcatac ttaaagaggt gcggggtgctt gatgtagatt ctccctctgg tgccccccat 540
ccccagggcc ttgttggtct gagatcccaa cacaaagggt gtagattcat tcagccgggc 600
tgggtcccac ttggggcctt ctcggcgaat tgggttcacag gactttgggt tccataccat 660
gccagcggct gcccggtcat tcgacagcat gtgtccagga ggccgtcctt tcctcttttt 720
gggaacaggg ctctctcgat gggcacattc ctcttctgtc tgtcggccac gctttatccc 780
tggaagctca tgggccaatc tgggtattac ttttctcca tctgaaaaca ggagtttagc 840
ctgtccagg cagctccgac aggcctcctg gatcagctgc tctgcgtcca cttcttcccc 900
gacattgtct ctgacgttca gtgtgcctt ctggaagaac ttcataact tgttgaagac 960
cgtctggatc tcctcgttga tgctaggctg caggacagct cgaaggaggt ccatggaaat 1020
ggcaggatct gtgaaacttg ttgtcatctg tgagcggcgg ccccttcgct gcacctgctt 1080
gtgctttatc attatgttcc aagggttcgt gaggaccagc tgccccgctg cgcccgctc 1140
gcccagctcg gagccgcccc gctctgcccc gccgggtccc cgcggctgct cggcgctgcc 1200
agtggcccc atggtcccc cggcgcccc caacctcagc ccgactctgc caccggcggg 1260
aaagtggcc 1269

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<210> 20
<211> 987
<212> DNA
<213> Canis familiaris

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<220>
<221> CDS
<222> (1)..(987)
<223>

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<400> 20
atg ggg gcc act ggc gac gcc gag cag ccg cgg gga ccc ggc ggg gca 48
Met Gly Ala Thr Gly Asp Ala Glu Gln Pro Arg Gly Pro Gly Gly Ala
1 5 10 15

gag cgg ggc ggc tcc gag ctg ggc gac gcg ggc gca gcg ggg cag ctg 96
Glu Arg Gly Gly Ser Glu Leu Gly Asp Ala Gly Ala Ala Gly Gln Leu
20 25 30

gta ctc acg aac cct tgg aac ata atg ata aag cac agg cag gtg cag 144
Val Leu Thr Asn Pro Trp Asn Ile Met Ile Lys His Arg Gln Val Gln

```

DI-12

35	40	45	
cga agg ggc cgc cgc tca cag atg aca aca agt ttc aca gat cct gcc Arg Arg Gly Arg Arg Ser Gln Met Thr Thr Ser Phe Thr Asp Pro Ala 50 55 60			192
att tcc atg gac ctc ctt cga gct gtc ctg cag cct agc atc aac gag Ile Ser Met Asp Leu Leu Arg Ala Val Leu Gln Pro Ser Ile Asn Glu 65 70 75 80			240
gag atc cag acg gtc ttc aac aag tat atg aag ttc ttc cag aag gca Glu Ile Gln Thr Val Phe Asn Lys Tyr Met Lys Phe Phe Gln Lys Ala 85 90 95			288
gca ctg aac gtc aga gac aat gtc ggg gaa gaa gtg gac gca gag cag Ala Leu Asn Val Arg Asp Asn Val Gly Glu Glu Val Asp Ala Glu Gln 100 105 110			336
ctg atc cag gag gcc tgt cgg agc tgc ctg gag cag gct aaa ctc ctg Leu Ile Gln Glu Ala Cys Arg Ser Cys Leu Glu Gln Ala Lys Leu Leu 115 120 125			384
ttt tca gat gga gaa aaa gta ata ccc aga ttg gcc cat gag ctt cca Phe Ser Asp Gly Glu Lys Val Ile Pro Arg Leu Ala His Glu Leu Pro 130 135 140			432
ggg ata aag cgt ggc cga cag aca gaa gag gaa tgt gcc cat cga gga Gly Ile Lys Arg Gly Arg Gln Thr Glu Glu Glu Cys Ala His Arg Gly 145 150 155 160			480
agc cct gtt ccc aaa aag agg aaa gga cgg cct cct gga cac atg ctg Ser Pro Val Pro Lys Lys Arg Lys Gly Arg Pro Pro Gly His Met Leu 165 170 175			528
tcg aat gac cgg gca gcc gct ggc atg gta tgg aaa cca aag tcc tgt Ser Asn Asp Arg Ala Ala Ala Gly Met Val Trp Lys Pro Lys Ser Cys 180 185 190			576
gaa cca att cgc cga gaa ggc ccc aag tgg gac cca gcc cgg ctg aat Glu Pro Ile Arg Arg Glu Gly Pro Lys Trp Asp Pro Ala Arg Leu Asn 195 200 205			624
gaa tct acc acc ttt gtg ttg gga tct cga gcc aac aag gcc ctg ggg Glu Ser Thr Thr Phe Val Leu Gly Ser Arg Ala Asn Lys Ala Leu Gly 210 215 220			672
atg ggg ggc acc aga ggg aga atc tac atc aag cac ccg cac ctc ttt Met Gly Gly Thr Arg Gly Arg Ile Tyr Ile Lys His Pro His Leu Phe 225 230 235 240			720
aag tat gca gct gac ccc cag gac aag cac tgg ctg gcc gag cag cat Lys Tyr Ala Ala Asp Pro Gln Asp Lys His Trp Leu Ala Glu Gln His 245 250 255			768
cac atg cgg gca aca ggg ggg aag atg gcc tac ctc ctc atc gag gag His Met Arg Ala Thr Gly Gly Lys Met Ala Tyr Leu Leu Ile Glu Glu 260 265 270			816

DI-12

gac atc cgg gac ctc gca gcc agt gat gac tat aga gga tgc ctg gac 864
Asp Ile Arg Asp Leu Ala Ala Ser Asp Asp Tyr Arg Gly Cys Leu Asp
275 280 285

ttg aag ttg gag gag ctg aaa tcc ttt gtg ctg ccc tcc tgg atg gtt 912
Leu Lys Leu Glu Glu Leu Lys Ser Phe Val Leu Pro Ser Trp Met Val
290 295 300

gag aag atg cga aag tac atg gag aca cta cgg aca gag aac gag cat 960
Glu Lys Met Arg Lys Tyr Met Glu Thr Leu Arg Thr Glu Asn Glu His
305 310 315 320

cgt gct gtt gaa gcg cct cca cag acc 987
Arg Ala Val Glu Ala Pro Pro Gln Thr
325

<210> 21
<211> 329
<212> PRT
<213> Canis familiaris

<400> 21

Met Gly Ala Thr Gly Asp Ala Glu Gln Pro Arg Gly Pro Gly Gly Ala
1 5 10 15

Glu Arg Gly Gly Ser Glu Leu Gly Asp Ala Gly Ala Ala Gly Gln Leu
20 25 30

Val Leu Thr Asn Pro Trp Asn Ile Met Ile Lys His Arg Gln Val Gln
35 40 45

Arg Arg Gly Arg Arg Ser Gln Met Thr Thr Ser Phe Thr Asp Pro Ala
50 55 60

Ile Ser Met Asp Leu Leu Arg Ala Val Leu Gln Pro Ser Ile Asn Glu
65 70 75 80

Glu Ile Gln Thr Val Phe Asn Lys Tyr Met Lys Phe Phe Gln Lys Ala
85 90 95

Ala Leu Asn Val Arg Asp Asn Val Gly Glu Glu Val Asp Ala Glu Gln
100 105 110

Leu Ile Gln Glu Ala Cys Arg Ser Cys Leu Glu Gln Ala Lys Leu Leu
115 120 125

Phe Ser Asp Gly Glu Lys Val Ile Pro Arg Leu Ala His Glu Leu Pro
130 135 140

DI-12

Gly Ile Lys Arg Gly Arg Gln Thr Glu Glu Glu Cys Ala His Arg Gly
145 150 155 160

Ser Pro Val Pro Lys Lys Arg Lys Gly Arg Pro Pro Gly His Met Leu
165 170 175

Ser Asn Asp Arg Ala Ala Ala Gly Met Val Trp Lys Pro Lys Ser Cys
180 185 190

Glu Pro Ile Arg Arg Glu Gly Pro Lys Trp Asp Pro Ala Arg Leu Asn
195 200 205

Glu Ser Thr Thr Phe Val Leu Gly Ser Arg Ala Asn Lys Ala Leu Gly
210 215 220

Met Gly Gly Thr Arg Gly Arg Ile Tyr Ile Lys His Pro His Leu Phe
225 230 235 240

Lys Tyr Ala Ala Asp Pro Gln Asp Lys His Trp Leu Ala Glu Gln His
245 250 255

His Met Arg Ala Thr Gly Gly Lys Met Ala Tyr Leu Leu Ile Glu Glu
260 265 270

Asp Ile Arg Asp Leu Ala Ala Ser Asp Asp Tyr Arg Gly Cys Leu Asp
275 280 285

Leu Lys Leu Glu Glu Leu Lys Ser Phe Val Leu Pro Ser Trp Met Val
290 295 300

Glu Lys Met Arg Lys Tyr Met Glu Thr Leu Arg Thr Glu Asn Glu His
305 310 315 320

Arg Ala Val Glu Ala Pro Pro Gln Thr
325

<210> 22
<211> 987
<212> DNA
<213> Canis familiaris

<400> 22
ggctctgtgga ggcgcttcaa cagcagcatg ctcgttctct gtccgtagtg tctccatgta 60

DI-12

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ctttcgcatac ttctcaacca tccaggaggg cagcacaaag gatttcagct cctccaactt 120
caagtccagg catcctctat agtcatcact ggctgcgagg tcccggatgt cctcctcgat 180
gaggaggttag gccatcttcc cccctgttgc ccgcatgtga tgctgctcgg ccagccagtg 240
cttgtcctgg gggtcagctg cataactaaa gaggtgcggg tgcttgatgt agattctccc 300
tctgggtgccc cccatcccca gggccttggt ggctcgagat cccaacacaa aggtggtaga 360
ttcattcagc cgggctgggt cccacttggg gccttctcgg cgaattgggt cacaggactt 420
tgggtttccat accatgccag cggctgcccg gtcattcgac agcatgtgtc caggaggccg 480
tcctttcttc tttttgggaa cagggtcttc tcgatgggca cattcctctt ctgtctgtcg 540
gccacgcttt atccctggaa gctcatgggc caatctgggt attacttttt ctccatctga 600
aaacaggagt ttagcctgct ccaggcagct ccgacaggcc tccatggatca gctgctctgc 660
gtccacttct tccccgacat tgtctctgac gttcagtgtc gccttctgga agaacttcat 720
atacttggtg aagaccgtct ggatctcttc gttgatgcta ggctgcagga cagctcgaag 780
gagggtccatg gaaatggcag gatctgtgaa acttggtgtc atctgtgagc ggcggcccct 840
tcgctgcacc tgctgtgtct ttatcattat gttccaaggg ttctgtgagta ccagctgccc 900
cgctgcgccc gcgtgcgcca gctcggagcc gccccgctct gccccgcggg gtccccgcgg 960
ctgctcgggg tcgccagtgg ccccat 987

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<210> 23
<211> 153
<212> DNA
<213> Canis familiaris

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<220>
<221> CDS
<222> (1)..(153)
<223>

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<400> 23
atg ggg gcc act ggc gac gcc gag cag ccg cgg gga ccc ggc ggg gca 48
Met Gly Ala Thr Gly Asp Ala Glu Gln Pro Arg Gly Pro Gly Gly Ala
1 5 10 15

gag cgg ggc ggc tcc gag ctg ggc gac gcg ggc gca gcg ggg cag ctg 96
Glu Arg Gly Gly Ser Glu Leu Gly Asp Ala Gly Ala Ala Gly Gln Leu
20 25 30

gta ctc acg aac cct tgg aac ata atg ata aag cac agg cag gtg cag 144
Val Leu Thr Asn Pro Trp Asn Ile Met Ile Lys His Arg Gln Val Gln
35 40 45

cga agg ggc 153

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Arg Arg Gly
50

<210> 24
<211> 51
<212> PRT
<213> Canis familiaris

<400> 24

Met Gly Ala Thr Gly Asp Ala Glu Gln Pro Arg Gly Pro Gly Gly Ala
1 5 10 15

Glu Arg Gly Gly Ser Glu Leu Gly Asp Ala Gly Ala Ala Gly Gln Leu
20 25 30

Val Leu Thr Asn Pro Trp Asn Ile Met Ile Lys His Arg Gln Val Gln
35 40 45

Arg Arg Gly
50

<210> 25
<211> 153
<212> DNA
<213> Canis familiaris

<400> 25
gcccccttcgc tgcacctgcc tgtgctttat cattatgttc caagggttcg tgagtaccag 60
ctgccccgct gcgcccgcgt cgccagctc ggagccgccc cgctctgccc cgccgggtcc 120
ccgcggctgc tcggcgctgc cagtggcccc cat 153

<210> 26
<211> 222
<212> DNA
<213> Canis familiaris

<220>
<221> CDS
<222> (1)..(222)
<223>

<400> 26
cgc cgc tca cag atg aca aca agt ttc aca gat cct gcc att tcc atg 48
Arg Arg Ser Gln Met Thr Thr Ser Phe Thr Asp Pro Ala Ile Ser Met
1 5 10 15
gac ctc ctt cga gct gtc ctg cag cct agc atc aac gag gag atc cag 96
Asp Leu Leu Arg Ala Val Leu Gln Pro Ser Ile Asn Glu Glu Ile Gln

DI-12

20	25	30	
acg gtc ttc aac aag tat atg aag ttc ttc cag aag gca gca ctg aac			144
Thr Val Phe Asn Lys Tyr Met Lys Phe Phe Gln Lys Ala Ala Leu Asn			
35	40	45	
gtc aga gac aat gtc ggg gaa gaa gtg gac gca gag cag ctg atc cag			192
Val Arg Asp Asn Val Gly Glu Glu Val Asp Ala Glu Gln Leu Ile Gln			
50	55	60	
gag gcc tgt cgg agc tgc ctg gag cag gct			222
Glu Ala Cys Arg Ser Cys Leu Glu Gln Ala			
65	70		

<210> 27
 <211> 74
 <212> PRT
 <213> Canis familiaris
 <400> 27

Arg Arg Ser Gln Met Thr Thr Ser Phe Thr Asp Pro Ala Ile Ser Met		
1	5	15
Asp Leu Leu Arg Ala Val Leu Gln Pro Ser Ile Asn Glu Glu Ile Gln		
20	25	30
Thr Val Phe Asn Lys Tyr Met Lys Phe Phe Gln Lys Ala Ala Leu Asn		
35	40	45
Val Arg Asp Asn Val Gly Glu Glu Val Asp Ala Glu Gln Leu Ile Gln		
50	55	60
Glu Ala Cys Arg Ser Cys Leu Glu Gln Ala		
65	70	

<210> 28
 <211> 222
 <212> DNA
 <213> Canis familiaris

<400> 28	
agcctgctcc aggcagctcc gacaggcctc ctggatcagc tgctctgcgt ccacttcttc	60
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gaccgtctgg atctcctcgt tgatgctagg ctgcaggaca gctcgaagga ggtccatgga	180
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<210> 29

DI-12

<211> 612
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 <213> Canis familiaris

<220>
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 <223>

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 1 5 10 15
 gag ctt cca ggg ata aag cgt ggc cga cag aca gaa gag gaa tgt gcc 96
 Glu Leu Pro Gly Ile Lys Arg Gly Arg Gln Thr Glu Glu Glu Cys Ala
 20 25 30
 cat cga gga agc cct gtt ccc aaa aag agg aaa gga cgg cct cct gga 144
 His Arg Gly Ser Pro Val Pro Lys Arg Lys Gly Arg Pro Pro Gly
 35 40 45
 cac atg ctg tcg aat gac cgg gca gcc gct ggc atg gta tgg aaa cca 192
 His Met Leu Ser Asn Asp Arg Ala Ala Ala Gly Met Val Trp Lys Pro
 50 55 60
 aag tcc tgt gaa cca att cgc cga gaa ggc ccc aag tgg gac cca gcc 240
 Lys Ser Cys Glu Pro Ile Arg Arg Glu Gly Pro Lys Trp Asp Pro Ala
 65 70 75 80
 cgg ctg aat gaa tct acc acc ttt gtg ttg gga tct cga gcc aac aag 288
 Arg Leu Asn Glu Ser Thr Thr Phe Val Leu Gly Ser Arg Ala Asn Lys
 85 90 95
 gcc ctg ggg atg ggg ggc acc aga ggg aga atc tac atc aag cac ccg 336
 Ala Leu Gly Met Gly Gly Thr Arg Gly Arg Ile Tyr Ile Lys His Pro
 100 105 110
 cac ctc ttt aag tat gca gct gac ccc cag gac aag cac tgg ctg gcc 384
 His Leu Phe Lys Tyr Ala Ala Asp Pro Gln Asp Lys His Trp Leu Ala
 115 120 125
 gag cag cat cac atg cgg gca aca ggg ggg aag atg gcc tac ctc ctc 432
 Glu Gln His His Met Arg Ala Thr Gly Gly Lys Met Ala Tyr Leu Leu
 130 135 140
 atc gag gag gac atc cgg gac ctc gca gcc agt gat gac tat aga gga 480
 Ile Glu Glu Asp Ile Arg Asp Leu Ala Ala Ser Asp Asp Tyr Arg Gly
 145 150 155 160
 tgc ctg gac ttg aag ttg gag gag ctg aaa tcc ttt gtg ctg ccc tcc 528
 Cys Leu Asp Leu Lys Leu Glu Glu Leu Lys Ser Phe Val Leu Pro Ser
 165 170 175
 tgg atg gtt gag aag atg cga aag tac atg gag aca cta cgg aca gag 576
 Trp Met Val Glu Lys Met Arg Lys Tyr Met Glu Thr Leu Arg Thr Glu
 180 185 190

DI-12

612

aac gag cat cgt gct gtt gaa gcg cct cca cag acc
 Asn Glu His Arg Ala Val Glu Ala Pro Pro Gln Thr
 195 200

<210> 30
 <211> 204
 <212> PRT
 <213> Canis familiaris
 <400> 30

Lys Leu Leu Phe Ser Asp Gly Glu Lys Val Ile Pro Arg Leu Ala His
 1 5 10 15

Glu Leu Pro Gly Ile Lys Arg Gly Arg Gln Thr Glu Glu Glu Cys Ala
 20 25 30

His Arg Gly Ser Pro Val Pro Lys Lys Arg Lys Gly Arg Pro Pro Gly
 35 40 45

His Met Leu Ser Asn Asp Arg Ala Ala Ala Gly Met Val Trp Lys Pro
 50 55 60

Lys Ser Cys Glu Pro Ile Arg Arg Glu Gly Pro Lys Trp Asp Pro Ala
 65 70 75 80

Arg Leu Asn Glu Ser Thr Thr Phe Val Leu Gly Ser Arg Ala Asn Lys
 85 90 95

Ala Leu Gly Met Gly Gly Thr Arg Gly Arg Ile Tyr Ile Lys His Pro
 100 105 110

His Leu Phe Lys Tyr Ala Ala Asp Pro Gln Asp Lys His Trp Leu Ala
 115 120 125

Glu Gln His His Met Arg Ala Thr Gly Gly Lys Met Ala Tyr Leu Leu
 130 135 140

Ile Glu Glu Asp Ile Arg Asp Leu Ala Ala Ser Asp Asp Tyr Arg Gly
 145 150 155 160

Cys Leu Asp Leu Lys Leu Glu Glu Leu Lys Ser Phe Val Leu Pro Ser
 165 170 175

Trp Met Val Glu Lys Met Arg Lys Tyr Met Glu Thr Leu Arg Thr Glu

Asn Glu His Arg Ala Val Glu Ala Pro Pro Gln Thr
195 200

<210> 31
<211> 612
<212> DNA
<213> Canis familiaris

<400> 31
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caagtccagg catcctctat agtcatcact ggctgagagg tcccggatgt cctcctcgat 180
gaggaggttag gccatcttcc cccctgttgc ccgcatgtga tgctgctcgg ccagccagtg 240
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ttcattcagc cgggctgggt cccacttggg gccttctcgg cgaattggtt cacaggactt 420
tggtttccat accatgccag cggctgcccg gtcattcgac agcatgtgtc caggaggccg 480
tcctttcctc tttttgggaa cagggttcc tcgatgggca cattcctctt ctgtctgtcg 540
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aacagcaggt tt 612

<210> 32
<211> 96
<212> DNA
<213> Canis familiaris

<220>
<221> CDS
<222> (1)..(96)
<223>

<400> 32
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Met Gly Ala Thr Gly Asp Ala Glu Gln Pro Arg Gly Pro Gly Gly Ala
1 5 10 15
gag cgg ggc ggc tcc gag ctg ggc gac gcg ggc gca gcg ggg cag ctg 96
Glu Arg Gly Gly Ser Glu Leu Gly Asp Ala Gly Ala Ala Gly Gln Leu
20 25 30

<210> 33

DI-12

<211> 32
<212> PRT
<213> Canis familiaris

<400> 33

Met Gly Ala Thr Gly Asp Ala Glu Gln Pro Arg Gly Pro Gly Gly Ala
1 5 10 15

Glu Arg Gly Gly Ser Glu Leu Gly Asp Ala Gly Ala Ala Gly Gln Leu
20 25 30

<210> 34
<211> 96
<212> DNA
<213> Canis familiaris

<400> 34
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tccccgcgggc tgctcggcgt cgccagtggc ccccat 96

<210> 35
<211> 69
<212> DNA
<213> Canis familiaris

<220>
<221> CDS
<222> (1)..(69)
<223>

<400> 35
aac cct tgg aac ata atg ata aag cac agg cag gtg cag cga agg ggc 48
Asn Pro Trp Asn Ile Met Ile Lys His Arg Gln Val Gln Arg Arg Gly
1 5 10 15
cgc cgc tca cag atg aca aca 69
Arg Arg Ser Gln Met Thr Thr
20

<210> 36
<211> 23
<212> PRT
<213> Canis familiaris

<400> 36

Asn Pro Trp Asn Ile Met Ile Lys His Arg Gln Val Gln Arg Arg Gly
1 5 10 15

Arg Arg Ser Gln Met Thr Thr

20

<210> 37
 <211> 69
 <212> DNA
 <213> Canis familiaris

<400> 37
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 ccaaggggtt 69

<210> 38
 <211> 99
 <212> DNA
 <213> Canis familiaris

<220>
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 <222> (1)..(99)
 <223>

<400> 38
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 Ser Phe Thr Asp Pro Ala Ile Ser Met Asp Leu Leu Arg Ala Val Leu
 1 5 10 15
 cag cct agc atc aac gag gag atc cag acg gtc ttc aac aag tat atg 96
 Gln Pro Ser Ile Asn Glu Glu Ile Gln Thr Val Phe Asn Lys Tyr Met
 20 25 30
 aag 99
 Lys

<210> 39
 <211> 33
 <212> PRT
 <213> Canis familiaris

<400> 39
 Ser Phe Thr Asp Pro Ala Ile Ser Met Asp Leu Leu Arg Ala Val Leu
 1 5 10 15
 Gln Pro Ser Ile Asn Glu Glu Ile Gln Thr Val Phe Asn Lys Tyr Met
 20 25 30
 Lys

DI-12

<210> 40
 <211> 99
 <212> DNA
 <213> Canis familiaris

<400> 40
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<210> 41
 <211> 99
 <212> DNA
 <213> Canis familiaris

<220>
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 <222> (1)..(99)
 <223>

<400> 41
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 Phe Phe Gln Lys Ala Ala Leu Asn Val Arg Asp Asn Val Gly Glu Glu
 1 5 10 15
 gtg gac gca gag cag ctg atc cag gag gcc tgt cgg agc tgc ctg gag 96
 Val Asp Ala Glu Gln Leu Ile Gln Glu Ala Cys Arg Ser Cys Leu Glu
 20 25 30
 cag 99
 Gln

<210> 42
 <211> 33
 <212> PRT
 <213> Canis familiaris

<400> 42
 Phe Phe Gln Lys Ala Ala Leu Asn Val Arg Asp Asn Val Gly Glu Glu
 1 5 10 15
 Val Asp Ala Glu Gln Leu Ile Gln Glu Ala Cys Arg Ser Cys Leu Glu
 20 25 30
 Gln

<210> 43
 <211> 99
 <212> DNA

<213> Canis familiaris

<400> 43

ctgctccagg cagctccgac aggcctcctg gatcagctgc tctgcgtcca ctttttcccc 60

gacattgtct ctgacgttca gtgctgcctt ctggaagaa 99

<210> 44

<211> 69

<212> DNA

<213> Canis familiaris

<220>

<221> CDS

<222> (1)..(69)

<223>

<400> 44

gct aaa ctc ctg ttt tca gat gga gaa aaa gta ata ccc aga ttg gcc 48

Ala Lys Leu Leu Phe Ser Asp Gly Glu Lys Val Ile Pro Arg Leu Ala

1

5

10

15

cat gag ctt cca ggg ata aag

69

His Glu Leu Pro Gly Ile Lys

20

<210> 45

<211> 23

<212> PRT

<213> Canis familiaris

<400> 45

Ala Lys Leu Leu Phe Ser Asp Gly Glu Lys Val Ile Pro Arg Leu Ala

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5

10

15

His Glu Leu Pro Gly Ile Lys

20

<210> 46

<211> 69

<212> DNA

<213> Canis familiaris

<400> 46

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gagtttagc 69

<210> 47

<211> 57

<212> DNA

<213> Canis familiaris

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<221> CDS

<222> (1)..(57)

<223>

<400> 47

cgt ggc cga cag aca gaa gag gaa tgt gcc cat cga gga agc cct gtt 48
Arg Gly Arg Gln Thr Glu Glu Glu Cys Ala His Arg Gly Ser Pro Val
1 5 10 15

ccc aaa aag 57
Pro Lys Lys

<210> 48

<211> 19

<212> PRT

<213> Canis familiaris

<400> 48

Arg Gly Arg Gln Thr Glu Glu Glu Cys Ala His Arg Gly Ser Pro Val
1 5 10 15

Pro Lys Lys

<210> 49

<211> 57

<212> DNA

<213> Canis familiaris

<400> 49

ctttttggga acagggcttc ctcgatgggc acattcctct tctgtctgtc ggccacg 57

<210> 50

<211> 60

<212> DNA

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<220>

<221> CDS

<222> (1)..(60)

<223>

<400> 50

agg aaa gga cgg cct cct gga cac atg ctg tcg aat gac cgg gca gcc 48
Arg Lys Gly Arg Pro Pro Gly His Met Leu Ser Asn Asp Arg Ala Ala
1 5 10 15

gct ggc atg gta
Ala Gly Met Val
20

<210> 51
<211> 20
<212> PRT
<213> Canis familiaris

<400> 51

Arg Lys Gly Arg Pro Pro Gly His Met Leu Ser Asn Asp Arg Ala Ala
1 5 10 15

Ala Gly Met Val
20

<210> 52
<211> 60
<212> DNA
<213> Canis familiaris

<400> 52
taccatgccca gcggctgccc ggtcattcga cagcatgtgt ccaggaggcc gtcctttcct 60

<210> 53
<211> 45
<212> DNA
<213> Canis familiaris

<220>
<221> CDS
<222> (1)..(45)
<223>

<400> 53
tgg aaa cca aag tcc tgt gaa cca att cgc cga gaa ggc ccc aag 45
Trp Lys Pro Lys Ser Cys Glu Pro Ile Arg Arg Glu Gly Pro Lys
1 5 10 15

<210> 54
<211> 15
<212> PRT
<213> Canis familiaris

<400> 54

Trp Lys Pro Lys Ser Cys Glu Pro Ile Arg Arg Glu Gly Pro Lys
1 5 10 15

<210> 55

DI-12

<211> 45
 <212> DNA
 <213> Canis familiaris

<400> 55
 cttggggcct tctcggcgaa ttggttcaca ggactttggt ttcca 45

<210> 56
 <211> 60
 <212> DNA
 <213> Canis familiaris

<220>
 <221> CDS
 <222> (1)..(60)
 <223>

<400> 56
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 Trp Asp Pro Ala Arg Leu Asn Glu Ser Thr Thr Phe Val Leu Gly Ser
 1 5 10 15

cga gcc aac aag 60
 Arg Ala Asn Lys
 20

<210> 57
 <211> 20
 <212> PRT
 <213> Canis familiaris

<400> 57
 Trp Asp Pro Ala Arg Leu Asn Glu Ser Thr Thr Phe Val Leu Gly Ser
 1 5 10 15

Arg Ala Asn Lys
 20

<210> 58
 <211> 60
 <212> DNA
 <213> Canis familiaris

<400> 58
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<210> 59
 <211> 60
 <212> DNA
 <213> Canis familiaris

DI-12

<220>
 <221> CDS
 <222> (1)..(60)
 <223>

<400> 59
 gcc ctg ggg atg ggg ggc acc aga ggg aga atc tac atc aag cac ccg 48
 Ala Leu Gly Met Gly Gly Thr Arg Gly Arg Ile Tyr Ile Lys His Pro
 1 5 10 15

cac ctc ttt aag 60
 His Leu Phe Lys
 20

<210> 60
 <211> 20
 <212> PRT
 <213> Canis familiaris

<400> 60
 Ala Leu Gly Met Gly Gly Thr Arg Gly Arg Ile Tyr Ile Lys His Pro
 1 5 10 15

His Leu Phe Lys
 20

<210> 61
 <211> 60
 <212> DNA
 <213> Canis familiaris

<400> 61
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<210> 62
 <211> 72
 <212> DNA
 <213> Canis familiaris

<220>
 <221> CDS
 <222> (1)..(72)
 <223>

<400> 62
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 Tyr Ala Ala Asp Pro Gln Asp Lys His Trp Leu Ala Glu Gln His His
 1 5 10 15

atg cgg gca aca ggg ggg aag atg 72
 Met Arg Ala Thr Gly Gly Lys Met

20

<210> 63
 <211> 24
 <212> PRT
 <213> Canis familiaris

<400> 63

Tyr Ala Ala Asp Pro Gln Asp Lys His Trp Leu Ala Glu Gln His His
 1 5 10 15

Met Arg Ala Thr Gly Gly Lys Met
 20

<210> 64
 <211> 72
 <212> DNA
 <213> Canis familiaris

<400> 64
 catcttcccc cctgttgccc gcatgtgatg ctgctcggcc agccagtgct tgtcctgggg 60
 gtcagctgca ta 72

<210> 65
 <211> 54
 <212> DNA
 <213> Canis familiaris

<220>
 <221> CDS
 <222> (1)..(54)
 <223>

<400> 65
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 Ala Tyr Leu Leu Ile Glu Glu Asp Ile Arg Asp Leu Ala Ala Ser Asp
 1 5 10 15
 gac tat 54
 Asp Tyr

<210> 66
 <211> 18
 <212> PRT
 <213> Canis familiaris

<400> 66

Ala Tyr Leu Leu Ile Glu Glu Asp Ile Arg Asp Leu Ala Ala Ser Asp

1 5 DI-12 10 15

Asp Tyr

<210> 67
<211> 54
<212> DNA
<213> Canis familiaris

<400> 67
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<210> 68
<211> 138
<212> DNA
<213> Canis familiaris

<220>
<221> CDS
<222> (1)..(138)
<223>

<400> 68
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Arg Gly Cys Leu Asp Leu Lys Leu Glu Glu Leu Lys Ser Phe Val Leu
1 5 10 15

ccc tcc tgg atg gtt gag aag atg cga aag tac atg gag aca cta cgg 96
Pro Ser Trp Met Val Glu Lys Met Arg Lys Tyr Met Glu Thr Leu Arg
20 25 30

aca gag aac gag cat cgt gct gtt gaa gcg cct cca cag acc 138
Thr Glu Asn Glu His Arg Ala Val Glu Ala Pro Pro Gln Thr
35 40 45

<210> 69
<211> 46
<212> PRT
<213> Canis familiaris

<400> 69
Arg Gly Cys Leu Asp Leu Lys Leu Glu Glu Leu Lys Ser Phe Val Leu
1 5 10 15

Pro Ser Trp Met Val Glu Lys Met Arg Lys Tyr Met Glu Thr Leu Arg
20 25 30

Thr Glu Asn Glu His Arg Ala Val Glu Ala Pro Pro Gln Thr
35 40 45

DI-12

<210> 70
<211> 138
<212> DNA
<213> Canis familiaris

<400> 70
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caagtccagg catcctct 138

<210> 71
<211> 987
<212> DNA
<213> Canis familiaris

<400> 71
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aaggccctgg ggatgggggg caccagaggg agaacttaca tcaagcacc gcacctctt 720
aagtatgcag ctgaccccca ggacaagcac tggctggccg agcagcatca catgcgggca 780
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gatgactata gaggatgcct ggacttgaag ttggaggagc tgaaatcctt tgtgctgccc 900
tcctggatgg ttgagaagat gcgaaagtac atggagacac tacggacaga gaacgagcat 960
cgtgctgttg aagcgctcc acagacc 987

<210> 72
<211> 987

<212> DNA

<213> Canis familiaris

<400> 72

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caagtccagg catcctctat agtcatcact ggctgcgagg tcccggatgt cctcctcgat      180
gaggaggtag gccatcttcc cccctgttgc ccgcatgtga tgctgctcgg ccagccagtg      240
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gtccactttc tccccgacat tgtctctgac gttcagtgtc gccttctgga agaacttcat      720
atacttggtg aagaccgtct ggatctcttc gttgatgcta ggctgcagga cagctcgaag      780
gagggtccatg gaaatggcag gatctgtgaa acttgttgtc atctgtgagc ggcggccacg      840
acgttgaact tgctgtgtct ttatcattat gttccaaggg ttcgtgagta ccagctgccc      900
cgctgcgccc gcgtcgccca gctcggagcc gcccgcctct gcccgcctg gacctcttgg      960
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<210> 73

<211> 681

<212> DNA

<213> Canis familiaris

<220>

<221> CDS

<222> (1)..(681)

<223>

<400> 73

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aat gtc ggg gaa gaa gtg gac gca gag cag ctg atc cag gag gcc tgt      48
Asn Val Gly Glu Glu Val Asp Ala Glu Gln Leu Ile Gln Glu Ala Cys
1          5          10          15

cgg agc tgc ctg gag cag gct aaa ctc ctg ttt tca gat gga gaa aaa      96
Arg Ser Cys Leu Glu Gln Ala Lys Leu Leu Phe Ser Asp Gly Glu Lys
          20          25          30

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DI-12

gta ata ccc aga ttg gcc cat gag ctt cca ggg ata aag cgt ggc cga Val Ile Pro Arg Leu Ala His Glu Leu Pro Gly Ile Lys Arg Gly Arg 35 40 45	144
cag aca gaa gag gaa tgt gcc cat cga gga agc cct gtt ccc aaa aag Gln Thr Glu Glu Glu Cys Ala His Arg Gly Ser Pro Val Pro Lys Lys 50 55 60	192
agg aaa gga cgg cct cct gga cac atg ctg tcg aat gac cgg gca gcc Arg Lys Gly Arg Pro Pro Gly His Met Leu Ser Asn Asp Arg Ala Ala 65 70 75 80	240
gct ggc atg gta tgg aaa cca aag tcc tgt gaa cca att cgc cga gaa Ala Gly Met Val Trp Lys Pro Lys Ser Cys Glu Pro Ile Arg Arg Glu 85 90 95	288
ggc ccc aag tgg gac cca gcc cgg ctg aat gaa tct acc acc ttt gtg Gly Pro Lys Trp Asp Pro Ala Arg Leu Asn Glu Ser Thr Thr Phe Val 100 105 110	336
ttg gga tct cga gcc aac aag gcc ctg ggg atg ggg ggc acc aga ggg Leu Gly Ser Arg Ala Asn Lys Ala Leu Gly Met Gly Gly Thr Arg Gly 115 120 125	384
aga atc tac atc aag cac ccg cac ctc ttt aag tat gca gct gac ccc Arg Ile Tyr Ile Lys His Pro His Leu Phe Lys Tyr Ala Ala Asp Pro 130 135 140	432
cag gac aag cac tgg ctg gcc gag cag cat cac atg cgg gca aca ggg Gln Asp Lys His Trp Leu Ala Glu Gln His His Met Arg Ala Thr Gly 145 150 155 160	480
ggg aag atg gcc tac ctc ctc atc gag gag gac atc cgg gac ctc gca Gly Lys Met Ala Tyr Leu Leu Ile Glu Glu Asp Ile Arg Asp Leu Ala 165 170 175	528
gcc agt gat gac tat aga gga tgc ctg gac ttg aag ttg gag gag ctg Ala Ser Asp Asp Tyr Arg Gly Cys Leu Asp Leu Lys Leu Glu Glu Leu 180 185 190	576
aaa tcc ttt gtg ctg ccc tcc tgg atg gtt gag aag atg cga aag tac Lys Ser Phe Val Leu Pro Ser Trp Met Val Glu Lys Met Arg Lys Tyr 195 200 205	624
atg gag aca cta cgg aca gag aac gag cat cgt gct gtt gaa gcg cct Met Glu Thr Leu Arg Thr Glu Asn Glu His Arg Ala Val Glu Ala Pro 210 215 220	672
cca cag acc Pro Gln Thr 225	681

<210> 74
 <211> 227
 <212> PRT
 <213> Canis familiaris

DI-12

<400> 74

Asn	Val	Gly	Glu	Glu	Val	Asp	Ala	Glu	Gln	Leu	Ile	Gln	Glu	Ala	Cys	1	5	10	15
Arg	Ser	Cys	Leu	Glu	Gln	Ala	Lys	Leu	Leu	Phe	Ser	Asp	Gly	Glu	Lys	20	25	30	
Val	Ile	Pro	Arg	Leu	Ala	His	Glu	Leu	Pro	Gly	Ile	Lys	Arg	Gly	Arg	35	40	45	
Gln	Thr	Glu	Glu	Glu	Cys	Ala	His	Arg	Gly	Ser	Pro	Val	Pro	Lys	Lys	50	55	60	
Arg	Lys	Gly	Arg	Pro	Pro	Gly	His	Met	Leu	Ser	Asn	Asp	Arg	Ala	Ala	65	70	75	80
Ala	Gly	Met	Val	Trp	Lys	Pro	Lys	Ser	Cys	Glu	Pro	Ile	Arg	Arg	Glu	85	90	95	
Gly	Pro	Lys	Trp	Asp	Pro	Ala	Arg	Leu	Asn	Glu	Ser	Thr	Thr	Phe	Val	100	105	110	
Leu	Gly	Ser	Arg	Ala	Asn	Lys	Ala	Leu	Gly	Met	Gly	Gly	Thr	Arg	Gly	115	120	125	
Arg	Ile	Tyr	Ile	Lys	His	Pro	His	Leu	Phe	Lys	Tyr	Ala	Ala	Asp	Pro	130	135	140	
Gln	Asp	Lys	His	Trp	Leu	Ala	Glu	Gln	His	His	Met	Arg	Ala	Thr	Gly	145	150	155	160
Gly	Lys	Met	Ala	Tyr	Leu	Leu	Ile	Glu	Glu	Asp	Ile	Arg	Asp	Leu	Ala	165	170	175	
Ala	Ser	Asp	Asp	Tyr	Arg	Gly	Cys	Leu	Asp	Leu	Lys	Leu	Glu	Glu	Leu	180	185	190	
Lys	Ser	Phe	Val	Leu	Pro	Ser	Trp	Met	Val	Glu	Lys	Met	Arg	Lys	Tyr	195	200	205	
Met	Glu	Thr	Leu	Arg	Thr	Glu	Asn	Glu	His	Arg	Ala	Val	Glu	Ala	Pro	210	215	220	

Pro Gln Thr
225

<210> 75
<211> 681
<212> DNA
<213> *Canis familiaris*

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caagtccagg catcctctat agtcatact ggctgcgagg tcccggatgt cctcctcgat 180
gaggaggtag gccatcttcc cccctgttgc ccgcatgtga tgctgctcgg ccagccagtg 240
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tctgggtgcc cccatcccca gggccttggt ggctcgagat cccaacacaa aggtggtaga 360
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tcctttcttc tttttgggaa cagggtcttc tcgatgggca cattcctctt ctgtctgtcg 540
gccacgcttt atccctggaa gctcatgggc caatctgggt attacttttt ctccatctga 600
aaacaggagt ttagcctgct ccaggcagct ccgacaggcc tcttgatca gctgctctgc 660
gtccacttct tccccgacat t 681

<210> 76
<211> 681
<212> DNA
<213> *Canis familiaris*

<400> 76
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cttccaggga taaagcgtgg ccgacagaca gaagaggaat gtgccatcg aggaagccct 180
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gaccagccc ggctgaatga atctaccacc tttgtgttgg gatctcgagc caacaaggcc 360
ctggggatgg ggggcaccag agggagaatc tacatcaagc accgcacct cttaagtat 420
gcagctgacc ccaggacaa gcactggctg gccgagcagc atcacatgcg ggcaacaggg 480

DI-12

gggaagatgg cctacctcct catcgaggag gacatccggg acctcgcagc cagtgatgac 540
tatagaggat gcctggactt gaagttggag gagctgaaat cctttgtgct gccctcctgg 600
atggttgaga agatgcgaaa gtacatggag acactacgga cagagaacga gcacgtgct 660
gttgaagcgc ctccacagac c 681

<210> 77
<211> 681
<212> DNA
<213> Canis familiaris

<400> 77
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ctttcgcata ttctcaacca tccaggaggg cagcacaag gatttcagct cctccaactt 120
caagtccagg catcctctat agtcactact ggctgcgagg tcccggatgt cctcctcgat 180
gaggaggtag gccatcttcc cccctgttgc ccgcatgtga tgctgctcgg ccagccagtg 240
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<210> 78
<211> 54
<212> DNA
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<223> Synthetic Primer

<400> 78
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<210> 79
<211> 39
<212> DNA
<213> Artificial sequence

<220>

<223> Synthetic Primer

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39

<210> 80

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<223> Synthetic Primer

<400> 80

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39

<210> 81

<211> 30

<212> DNA

<213> Artificial sequence

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<223> Synthetic Primer

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30

<210> 82

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<212> DNA

<213> Artificial sequence

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<223> Synthetic Primer

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33

<210> 83

<211> 27

<212> DNA

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<223> Synthetic Primer

<400> 83

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27

<210> 84

<211> 45

<212> DNA

<213> Artificial sequence

<220>

<223> Synthetic Primer

<400> 84

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45

<210> 85

<211> 37

<212> DNA

<213> Artificial sequence

<220>

<223> Synthetic Primer

<400> 85

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37